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# Personnel Selection in the Transportation Sector: An Investigation of Personality Traits in Relation to the Job Performance of Delivery Drivers

Mark Andrew Tichon

*University of Tennessee - Knoxville*

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To the Graduate Council:

I am submitting herewith a dissertation written by Mark Andrew Tichon entitled "Personnel Selection in the Transportation Sector: An Investigation of Personality Traits in Relation to the Job Performance of Delivery Drivers." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

Charles Thompson, Major Professor

We have read this dissertation and recommend its acceptance:

John W. Lounsbury, Richard Saudargas, P. Gary Klukken

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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Anne Mayhew  
Vice Chancellor and Dean  
Of Graduate Studies

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PERSONNEL SELECTION IN THE TRANSPORTATION SECTOR:  
AN INVESTIGATION OF PERSONALITY TRAITS IN RELATION  
TO THE JOB PERFORMANCE OF DELIVERY DRIVERS.

A Dissertation Presented for the  
Doctor of Philosophy Degree  
The University of Tennessee, Knoxville

Mark Andrew Tichon

December 2005

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## ABSTRACT

The purpose of this study was to assess the utility of a pre-employment selection instrument for predicting occupational success of delivery drivers. A criterion-based concurrent validation study was performed on a customized version of the *Personal Style Inventory*, a work-based personality measurement system based on the Five Factor model of personality (Lounsbury & Gibson, 2000). Relationships between both broad and narrow bandwidth personality dimensions and important job performance criterion measures were examined. Four traits were found to be correlated with Overall Performance Rating of delivery drivers: Agreeableness, Comfort with Procedures, Attention to Detail, and Preference for Long Tenure. A stepwise regression method revealed that Comfort with Procedures was the best predictor of overall performance, accounting for 17% of the variance in the regression model. No other personal style scales accounted for additional incremental variance. Intercorrelations between predictor variables are discussed and limitations of current study are examined. Findings are discussed in regard to previous literature reviewed and suggestions for future research are made. In addition, theoretical and practical implications of the research are discussed.

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## CHAPTER I

### INTRODUCTION AND REVIEW OF LITERATURE

#### *Introduction*

Literature published over the last decade documents the increased confidence researchers have in the validity of personality-based tests for personnel selection (Robertson & Smith, 2001). Meta-analyses consistently show personality measures to be valid predictors of job performance for various occupational groups (Barrick & Mount, 1991; Ones & Viswesvaran, 2001; Salgado, 2002). Current best practice for development of a pre-employment testing instrument is criterion-based validation, wherein specific personality traits are correlated with specific performance dimensions based on a job analysis (Jenkins & Griffith, 2004; Schneider, Hough, & Dunnette, 1996). This dissertation outlines a criterion-based validation study, which analyzes relationships between job performance and personality traits of delivery drivers, as measured by the *Personal Style Inventory* (Lounsbury & Gibson, 2000), a work-based personality measurement system based on the Five Factor model of personality.

#### *Background in Trait-and-Factor Theory*

The idea that certain persons may be better suited for particular occupations based on their personalities has a long history—this idea was formally advanced by Frank Parsons in the early twentieth century (Parson's trait-and-factor theory, as reviewed in Zunker, 1998). Parson's trait-and-factor theory posits a straightforward three step vocational assignment process. The first step consists of making an assessment of the



personality of the individual job seeker. The second step consists of surveying and clearly outlining the requirements of the occupation. The third and final step is the matching between personality of the job seeker and important job traits of the occupation to find the best fit. This process is the basic premise upon which much of vocational assessment and counseling process has been built, including the career counseling process of the Veteran's Administration, most college and university counseling centers (Super, 1972), and the *Dictionary of Occupational Titles* (U.S. Department of Labor, 1977). The personality based pre-employment testing process outlined in this paper falls under the broad rubric of this trait-and-factor theory.

Many career interest inventories have been designed to facilitate the fit between job-seeker and occupation. Commonly used instruments are the Strong Interest Inventory (Strong, 1983), Kuder Interest Inventories (Kuder, 1966), and the Self Directed Search (Holland, 1987). These assessment tools are taken by job seekers to further career personality understanding and help to inform their vocational decision making process (Zunker, 1998). Despite their usefulness in guiding individual job seekers, interest inventories are not commonly used by employers to assess the appropriateness of potential employees, as interest is not necessarily correlated with ability, aptitude, or needed job skills.

Another assessment instrument that has seen use in employment testing is the Minnesota Multiphasic Personality Inventory, or MMPI. Empirically derived to assist in diagnosing psychopathology, the MMPI—and revised MMPI-2—has been used to assess personality of individuals who may adversely impact public safety, including police officers (Detrick, Chibnall & Rosso, 2001; Kornfeld, 1995), airline pilots (Butcher,

1994), and government security personnel (Inwald & Brockwell, 1991). As the MMPI was not developed to measure occupational fitness of the normal personality, experts contend that this inventory is best used for screening outliers, whose personality suggests cause for concern and urge caution in using the MMPI in the pre-employment setting (Butcher, 1994).

Despite their usefulness in specific applications, interest inventories and the MMPI are not commonly used in pre-employment screening. The most widely used state-of-the-art personality based inventories are based on the Five Factor Model of Personality.

### *The Five Factor Model of Personality*

Throughout the twentieth century, a wide variety of different theories and measurements of personality have been advanced. The outlook for personality-based occupational testing at the middle of the twentieth century was bleak, with researchers Guion and Gottier (1965) finding no harmonious agreement among various schools of thought. These researchers found little agreement in the body of research literature to establish evidence for a clear relationship between personality traits and occupational performance.

The 1970s was a period of increasingly widespread use of computers in test construction and statistical analyses. The method of factor analysis was used to search for common traits underlying complex phenomena. One such application was psycholexical analysis, or the collecting of all the personality descriptors within a language and searching for a solution to the underlying factors. The resulting model of this factor

analysis of language resulted in the Five Factor Model of personality (for a review of the emergence of the Five Factor Model, see Goldberg, 1990). The “Big Five” traits that have emerged in through this lexical analysis of character traits are *Openness to Experience, Conscientiousness, Extroversion, Agreeableness, and Emotional Stability*, the opposite pole of Neuroticism.

By the mid 1980’s, the Five Factor Model of personality gained widespread acceptance due to its ability to categorize and parsimoniously explain major variances in personality along five orthogonal poles. Unlike many other theoretical explanations of personality, the Big Five model does not have its roots in developmental or psychopathology. Instead, the five factor model emerged out of an examination of the normal adult personality, contributing to its widespread acceptance. Though some debate exists over the ability of the Big Five taxonomy to adequately describe all facets of personality, the Five Factor model has been described as a personality theory that “Dominates the landscape of current psychological research” (Ewen, 1998, p. 141).

The Big Five traits appear to be independent of one another and are uniform across genders and many different cultures (Salgado, Moscoso, & Lado, 2003). Recent meta-analytical review provides a “flood of research demonstrating longitudinal stability” of the Big Five personality variables throughout the adult lifespan (Caspi & Roberts, 2001, p. 59). Important to pre-employment testing, the Big Five personality dimensions have been consistently shown to be valid predictors of job performance and other organizational behaviors (Barrick, Mount, & Judge, 2001; Ones & Viswesvaran, 1996).

Evidence suggesting use of five factor-based inventories over other personality inventories for purposes of personnel selection is compelling. In a recent meta-analysis,

Salgado (2003) divided personality-based pre-employment inventories into two groups—those that were developed based on the five factor taxonomy and those that were not. It was found that Big Five based inventories proved superior in measuring Conscientiousness and Emotional Stability, the two dimensions most commonly associated with job performance. In reviewing the utility of the Five Factor Model in personnel selection, Salgado highlights the abundance of evidence supporting the predictive value of these two broad traits on occupational success and concludes that, “non-FFM inventories should be replaced by FFM inventories when the interest of the study or selection process is to assess conscientiousness and emotional stability” (p. 331).

### *Narrow Traits*

Within each of the Big Five broad traits of personality lie more specific narrow traits. For example, within the broader trait of Conscientiousness lie such narrow traits as orderliness and attention to detail. One debate in the literature concerns the concept of *bandwidth*—whether it is more appropriate to use the more broad Big Five traits or whether to design selection instruments with the more specific narrow facets which comprise these broad traits. Proponents for the use of broad traits include personality researchers Ones and Viswesvaran (1996), who cite higher reliabilities of broad constructs, because they are comprised of a greater number of items. These researchers also posit that the broad traits are preferable because job performance criteria are often spread across many broad behavioral domains, and these generalities are best captured with broad measures.

In the debate over bandwidth, the recent trend is toward incorporating both broad traits and narrow facets into a single instrument, as there is a growing body of research that lends empirical evidence for the ability of narrow traits to add predictive validity beyond the broad Big Five measures (Schneider, Hough & Dunnette, 1996; Stewart, 1999). More specifically, additional variance has been accounted for by narrow facets above and beyond the Big Five traits (e.g., Lounsbury, Gibson, & Hamrick, 2004; Lounsbury et. al. 2003). Some researchers have suggested using a personality based job analysis to identify the relevant narrow traits in order to increase the face validity and relatedness to job predictor criterion (Jenkins & Griffith, 2004).

Ashton (1998) makes a clear case for the inclusion of narrow traits in personnel selection instruments, noting increased contribution to variance beyond what is accounted for by the Big Five personality dimensions. Ashton notes a major disadvantage of relying entirely on broad personality measures is that “one is prevented from extracting from the broad dimensions those narrower facets that have the strongest theoretical and empirical relationships with the criteria of interest.” (p. 291) Other prominent personality researchers echo the importance of narrow traits and warn of, “variance that might be lost when aggregating those narrow trait scales into broad factor measures” (Paunonen, Haddock, Forsterling and Keinonen, 2003, p. 431).

### *Ethical Considerations in Pre-employment Testing*

The topic of pre-employment testing elicits ethical and legal issues concerning discrimination. The original Equal Employment Opportunity Guidelines (EEOC, 1966) warn that psychological tests may serve as a barrier to employment and support

discriminatory hiring practices. The landmark case of *Griggs vs. Duke Power* (1971) requires companies to demonstrate adequate test validity in order to ensure that the test correlates with job performance criterion appropriately. In 1978, the Equal Employment Opportunity Commission refined the original guidelines and established the “Uniform Guidelines on Employee Selection Procedures” (EEOC, 1978) to expressly ban any racially biased tests and further inform those who select personnel on acceptable procedures.

The discriminatory nature of cognitive achievement tests has been well documented (Sackett et. al. 2001). Studies suggest this adverse impact on certain cultural and ethnic minorities remains even when cognitive achievement tests are combined with non-discriminatory methods (Bobko, Roth, & Potosky, 1999). For these reasons, tests focusing on cognitive achievement tend to be ill-suited for pre-employment screening. This adverse effect on EEOC protected groups tends not to occur for personality based inventories, as two landmark meta-analyses have shown that pre-employment inventories based on the Big Five factors of personality have little adverse impact against racial and ethnic minorities (Collins & Gleaves, 1998; Hogan, Hogan & Roberts, 1996; Ones & Visweveran, 1998).

A practical concern in personality-based testing is the effect of impression management upon validity and reliability of the results. Most of the research suggests that social desirability has little effect on content validity in personality testing for employment selection (Barrick & Mount, 1996; Ones & Viswesvaran, 1998). Research with the instrument used to gather data for this current study has demonstrated that impression management has little effect on the validity of results, and that removing the

effects of fake good did not enhance criterion-related validity of personality constructs (Weilbacher, 2000).

### *Delivery Drivers*

Logistics and transportation is a rapidly growing field, evidenced by the fact that Transportation and Material Moving Occupations delineate a major classification of occupations in the latest edition of the Dictionary of Occupational Titles (Farr & Shatkin, 2004). Over three million persons are employed in the occupational domain of truck driver, including heavy, tractor-trailer and light or delivery services. My literature review will include the larger field of tractor-trailer truck driving due to similarity of occupational description and demands.

Safety and driving record is most often the subject of investigation when research is conducted on job performance of persons engaged in the transportation and material moving occupations, because of the impact on public safety. Examples of this research emphasis include studies on the safe driving practices of pizza delivery drivers (Ludwig & Geller, 1997), how urban transit drivers cope with time pressure, passengers, and traffic safety (Meijman & Kompier, 1998), and the relationships between school bus accidents and selected driver characteristics (Tonnsen, 1982).

The current study can be informed from an examination of safety related performance among petroleum-product delivery drivers (Arthur, Barrett, & Doverspike, 1990), due to the close similarity of the specific job duties. In the Arthur, Barrett, & Doverspike study, researchers implemented a battery consisting of measures of general cognitive ability, field independence, verbal intelligence, and auditory selective attention.

None of these measures showed correlation with incidence of petroleum handling accidents. Only the test of selective attention showed a significant correlation with driving accident involvement. Researchers attributed this relationship between accidents and measures of selective attention to differences in perceptual style based on an information-processing model.

Many barriers exist to incorporating these findings into a program of pre-employment testing. Though a wide variety of assessment instruments was used, researchers only measured variables related to the job performance criterion of safety. While safety remains an important variable when assessing prospective petroleum-product drivers, it represents only one aspect of overall job performance. Additionally, while many paper and pencil measures were part of the Arthur et. al. study, the only measure that showed any significant correlation with safety of drivers was a test of selective attention called the ASAT. The authors of this study note that the specialized equipment and trained administrator required for this test serve as potential barriers to wide scale implementation as part of pre-employment testing.

As is common with analyses of occupations that involve driving, all of the aforementioned studies focused primarily on driving and accident records. Few investigators expand the scope of investigation to further include other factors which determine successful employment. A review of literature highlights three studies which expand the scope of inquiry beyond safety measures to investigate occupational success and longevity of truck drivers: 1) A comprehensive investigation of psychological job strain and length of tenure in the truck driving field by de Croon and colleagues (2004); 2) an analysis of truck driver turnover as related to job performance data (Rhine, 1994);



and 3) an investigation correlating delivery driver job performance with select pre-employment selection instruments (Goodwin, 1968).

De Croon and colleagues (2004) examined tenure in the truck driving field over a two year period and identified psychological job strain as an important cause of voluntary driver turnover. They found that drivers who perceive their work as more stressful are more likely to transfer out of the truck driving profession than are those drivers who perceive their work as less stressful. De Croon and colleagues recommend that strained employees search for jobs in another occupational setting as transfer outside of the truck driving industry resulted in significantly lower psychological strain for the highly strained drivers in this study. Though personality variables were not explicitly measured, their findings are consistent with the proposition that the fit between personality and job factor may account in part for turnover.

Another researcher to examine the area of turnover in the truck driving profession is Richard Rhine (1994), who studied a wide range of job performance behaviors among over 3000 drivers. Rhine examined differences between two groups—those who had a tenure of less than six months and those drivers who maintained employment for at least one year. No key differences between the two groups were found for demographic variables of gender or marital status, while age and ethnic affinity showed only slight correlation with length of service classification. The variables most strongly correlated with tenure were all job-related measures of efficiency, including variables such as delivery rate, timeliness of deliveries, and amount of time spent idling in hubs. Though the Rhine study correlated objective job performance data with length of tenure, no assessment of driver personality variables was made. Most of the factors that correlated

with length of tenure in this study would logically fall under the Big Five factor of Conscientiousness.

The most comprehensive study in the literature correlating delivery driver job performance with pre-employment selection instruments was conducted by Charles Goodwin (1968). He investigated relationships between driver selection instruments and performance measures among delivery drivers at United Parcel Service in order to investigate whether commonly used selection instruments demonstrated face and predictive validity. In this study of 129 drivers, a wide range of driver selection instruments were used, including 1) Real-life driving skills road test, 2) The Wonderlic Personnel Test – Form IV, 3) Ratings of References from previous employers, and 4) Number of Jobs previously held. Measures of driver performance were rich and varied. Among these were 1) Annual evaluation on twenty-three important job-related categories, 2) Job Service Records, 3) Auto Accident Reports, 4) Employee Injury Claim Reports, and 5) two separate Supervisory Rating Forms which included categories for reliability, dependability, productivity.

Goodwin investigated 45 separate hypotheses regarding correlations of logically related pre-employment screening measures and job performance criteria. The overarching finding of this study was that the pre-employment selection tests used failed to predict which drivers would excel in this occupation. Results of Goodwin's inquiry included the following: 1) There was no significant correlation between number of jobs previously held and current job performance, 2) Those drivers who had a multiple short-term jobs in their employment history were no less likely to succeed than those who had been on former jobs for a greater length of time, 3) Reference ratings from previous

employers were not correlated with job performance, 4) Motor vehicle records of suspensions and violations prior to hire showed no significant correlation with motor vehicle and personal injury accidents experienced on the job, 5) No significant relationship existed between scores on the Wonderlic Personnel Test and Overall Driver Performance Ratings.

Goodwin concluded pre-employment selection tests used with delivery drivers were unreliable and lacking in ability to predict job performance:

“The validity of selection criteria such as marital status, number of prior jobs, years of school, military rank, and The Wonderlic Personnel Test, may be questioned. Any assumption by Management that these variables are relevant to job objectives are not substantiated by this study; nor do any published correlation studies justify their continued usage or suitability for selection of commercial fleet drivers... The abilities and personal qualifications considered by the Fleet’s management as most important to learning and performing the driving-delivery task are not adequately assessed by established selection instruments and performance measures. The deficiency is attributed to a lack of sufficient diagnostic measures of social attitudes, emotional stability, and other personality traits, before and after hire.” (p. 114)

As shown in the above review of literature regarding truck and delivery driver selection; no previously published studies exist that can adequately predict success in the delivery driving occupation. The proposed analysis will investigate a wide range of personality traits hypothesized to correlate with performance of job-related behaviors.

*Problem Statement*

Personnel selection methods based on the five factor model of personality are considered state-of-the-art in applied psychology (Salgado, 2003). Jenkins & Griffith (2004) highlight the importance of a personality-based job analysis and empirical validation upon specific occupational groups before a selection instrument can be used to predict job applicants' future job performance. However, in a review of literature, no published studies could be found that investigated how five factor based personality inventories correlate with the job performance of delivery drivers. Therefore, the purpose of the present study was to address this void in the literature.

## CHAPTER II

### METHODOLOGY

#### *Sample*

Participants in the dataset for this study were 39 fleet delivery drivers from a fuel oil delivery company located in the Northeastern United States. Demographic statistics including data regarding age, gender, and racial ethnicity of drivers were not included in the data collection process.

#### *Personality Measurement*

The *Personal Style Inventory*, or PSI, (Lounsbury & Gibson, 2000) an assessment instrument which places an emphasis on job-relatedness of personality measures, was used to gather the data for this study. Originally based on the Five Factor Model of personality, the PSI has been expanded beyond these major personality dimensions to include additional work-based constructs, such as Preference for Long Tenure and Customer Service Orientation. Over 30 distinct scales measuring facets of personality style have been developed. These modular scales can be combined with each other, based on job analysis, to form a customized inventory useful for assessing a wide variety of occupations. Validation studies on the PSI show a high degree of correlation with main facet scales of other major Five Factor based inventories, e.g., the PSI correlates with NEO-PIR (Costa & McCrae, 1992) scale of Extraversion ( $r = .80, p < .01$ ), while PSI measure of Emotional Stability correlates with the Neo-PIR scale of Neuroticism ( $r = -.73, p < .01$ ). For a complete review of test development, including construct validity and

correlation with other standardized personality measures, see the *Personal Style*

*Inventory* manual (Lounsbury & Gibson, 2001).

Each item of the PSI asks respondents to reply to questions on a five-point response scale anchored between two verbal poles. This design increases respondent degree of freedom and results in a greater data gained from each question as compared with the forced choice format used in other standard personality assessment instruments. This format used in the PSI is displayed in the three example items shown in Figure 1:

---

Introversion sample item:

I prefer a job where I am not around people very much.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I take pleasure in talking to many different people at work.
	1	2	3	4	5	

Agreeableness sample item:

When asked to do something I don't want to do, I don't make a fuss.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I am pretty hard-headed and stubborn when asked to do something I don't want to do.
	1	2	3	4	5	

Emotional Stability sample item:

I might get so upset over something that I would have to leave work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I would never have to leave work because I was upset.
	1	2	3	4	5	

Figure 1: Sample items from the Personal Style Inventory

---

An important step in selecting the appropriate personality dimensions for criterion-based validation studies is to select appropriate constructs informed by a personality-based job analysis (Jenkins & Griffith, 2004). Job analysis for the present study was conducted by a licensed industrial-organizational psychologist, employed by Resource Associates, who was a partner in developing the Personal Style Inventory.

Input as to important driver characteristics was sought from a team of tenured drivers, dispatchers, and line supervisors at the selected company who were knowledgeable in important aspects of job performance. Feedback from these professionals highlighted a number of traits important to proficient job performance. Included in these preferred driver characteristics were task-related variables such as safety-mindedness, efficient usage of time, and reliability. The ability to perform routine tasks was a commonly noted theme, as the job under investigation requires a driver to proceed through a number of ordered steps at every delivery stop. Mastery of equipment and a working knowledge of mechanical problem solving were commonly mentioned by respondents, as drivers work alone and need to engage in vehicle maintenance and problem solving due to variation in fuel oil systems encountered on delivery routes. Communication and interpersonal skills were also cited as important because relationships with co-workers, managers, and customers are significant aspects of the job of delivery driver. Additionally, the ability to work long hours in extreme conditions was noted by many respondents, as the job examined requires outdoor work in the winter season.

Based upon an examination of overlap between driver characteristics necessary to perform job duties and logically related personality scales, the consulting psychologist

designed an inventory comprised of the following 12 personality scales:

*Agreeableness, Emotional Stability, Extroversion, Work Drive, Comfort with Procedures, Attention to Detail, Tough Mindedness, Assertiveness, Teamwork, Customer Service Orientation, Potential for Long Tenure, and Company Loyalty.* Below is summary information for traits included in the version of the PSI used to collect data for this study.

Three of the broad Big Five factors were included in the PSI used to gather data for this study: *Agreeableness, Emotional Stability, and Extroversion*. Based on results of job analysis, all three of these personality traits were deemed relevant to important broad facets of job performance. Additionally, these traits are identified in literature as consistently related to occupational performance (Barrick & Mount, 1991; Ones & Viswesvaran, 2001). The factor of Openness was not assessed in this current study, as it was not identified in the job analysis as an important factor for performance. Additionally, a meta-analysis of personnel selection literature provides marginal evidence for the factor of Openness to predict occupational behaviors in criterion-based studies (Salgado, 2003).

Conscientiousness is often cited as the Big Five factor most strongly correlated with job performance for a wide variety of occupations (Barrick & Mount, 1991; Ones & Viswesvaran, 2001; Salgado, 2003) and has been shown to correlate with both training criteria and job performance criteria (Robertson & Smith, 2001). In the current study, conscientiousness was not measured as a unitary broad trait, but instead was assessed by the three related narrow band traits of *Work Drive, Comfort with Procedures, and Attention to Detail*. Work Drive refers to the disposition to work hard and for long hours, invest time and energy into job performance and extend oneself to achieve job success.



Comfort with Procedures assesses propensity for following rules and instructions in a set order, with high scorers likely to excel in routine work. Attention to Detail assesses the tendency to be alert to the specifics of a situation and focus on precision and accuracy, with high scoring individuals less prone to making careless errors.

The *Tough Mindedness* scale assesses a narrow band trait within the broad factor of Emotional Stability. High scorers tend to be realistic and unsentimental when making judgments and drawing conclusions, and may demonstrate a preference for physically demanding work. They may also display the ability to function well under stress and time pressures on the job.

*Assertiveness* is a narrow band trait within the Big Five factor of Agreeableness that measures social dominance. Individuals who score high on Assertiveness tend to exert their ideas and opinions, confronting problems and challenges directly.

*Teamwork* measures a narrow trait within the broad trait of Agreeableness. Persons scoring high on this dimension tend to contribute to interdependence and cohesion in a workgroup, while low scorers would tend to be uncooperative and difficult to work alongside.

*Customer Service Orientation*, *Potential for Long Tenure*, and *Company Loyalty* are three modular scales which are not directly based out of the Five Factor model of personality. These scales have been included in this inventory for the purposes of workforce evaluation and long-term operational planning. As the names of these variables would suggest, persons who score high in the scale of Customer Service Orientation would tend to provide responsive and quality assistance to ensure customer satisfaction. A high scorer in Potential for Long Tenure would have a tendency to remain

with one company for a long duration, while a low scorer would tend to job-hop from employer to employer. Company Loyalty measures the propensity for the employee to represent a company in the best light, while low scorers on this dimension may have a tendency to break company rules and disparage the company in public.

### *Mechanical Reasoning Test*

Aptitude tests are often used for employment selection purposes when they are deemed to be logically correlated with certain performance criterion. Tests of mechanical aptitude have been shown to correlate with certain aspects of job performance and training in a wide variety of industrial settings (Roth & Champion, 1992). For example, they have been shown to increase increased predictive validity of the screening instruments in predicting job success in the recruitment of fire fighters beyond other cognitive measures (Barrett, Polomsky, & McDaniel, 1999).

The Mechanical Reasoning Test included with the PSI consisted of nineteen questions related to mechanical comprehension. High scorers on this test tend to pick up new information on a job training program more quickly and demonstrate higher ability to apply what they have learned in on-the-job applications. Low scorers tend to have a great deal of difficulty learning new things about equipment operations and have more difficulty with mechanical troubleshooting.

### *Job Performance Rating Form*

Criterion measures for this investigation were based on supervisor appraisal of delivery driver job performance. In this method of examining concurrent validity, scores

on the personality inventory are correlated with actual performance data for individual respondents (Ree, Carretta, & Earles, 1999). In the current study, a Performance Rating Form—included as Appendix B—was used to record supervisor ratings on participants who had filled out the Personal Style Inventory. On the Performance Rating Form, the supervisor rated applicants on the following criterion: 1) Ability to learn, 2) reasoning ability, 3) job skills competencies, 4) openness to new learning, 5) productivity, 6) quality, 7) safety, 8) teamwork, 9) relationships with associates, 10) relationships with managers, 11) dependability/reliability, 12) attendance and timeliness, and 13) functioning under stress. In addition, the two objective variables of 14) “delivery stops per day” and 15) “gallons of oil delivered per day” were calculated and then converted to scores compatible with numerical ratings used on the Supervisor Rating Form. Additionally, a score for 16) Overall Performance Rating was assigned to each driver.

The supervisor was asked to rate each driver on the 16 discrete job performance criterion measures. The performance of each criterion is rated on an 8 point Likert-type scale, with ratings being closely tied to a descriptive category, as outlined below:

1 = Performance does not meet, or rarely meets, minimum job standards.

2 = Performance is less than satisfactory in many respects.

3 = Performance is satisfactory in most respects but not all.

4 = Performance is satisfactory in all respects.

5 = Performance is above average performance but not superior.

6 = Performance is superior in almost all respects.

7 = Performance is definitely superior in all respects.

8 = Single best performance I have ever observed or even hope to observe.

### *Procedures*

All drivers filled out a paper and pencil version of the personality measure at a team meeting in March, 2003. One supervisor, who managed daily production operations and had at least one season of experience with all drivers, filled out the Job Performance Rating Forms for all drivers. Data for both personality and job performance ratings were collected, scored, and entered into database of Resource Associates. After identifying information was deleted, I was given permission to obtain these data from an archival data source maintained by Resource Associates. These procedures were approved by The University of Tennessee, Knoxville Institutional Review Board to access the archival data for purposes of writing this dissertation.

### *Research Questions*

Generation of hypotheses follows the deductive reasoning approach outlined by Barrick, Mount, & Gupta (2003). Based on the assumption that “constructs in the five factor model are well defined and understood,” (p. 49) hypotheses were generated by looking at logical areas of overlap in content between personal style scales and important job requirements of the occupation of delivery driver. Personality traits that would be of interest to the employer were given highest consideration. Some personal style scales, such as “Preference for Long Tenure”, were not used in hypothesis generation, as they are more germane to company planning and are considered to have less bearing on job performance than other measured personality dimensions.

Nine hypotheses and one research question were investigated in the present study. The nine hypotheses dealt with correlations between drivers’ scores on a discrete

dimension of the PSI and supervisor appraisal of a logically related job performance criterion, while the research question concerned how all of the traits jointly accounted for variance in Overall Performance Rating of the drivers.

*Hypothesis 1: Agreeableness will be positively correlated with Relationships with Managers of delivery drivers.*

Agreeableness has been found to be correlated with occupational performance related to interpersonal relationships (Barrick, Mount, & Judge, 2001, and others). Employees who score high in Agreeableness tend to be more amiable and have a higher proclivity for working interdependently with others. As drivers in this study have little contact with customers and primarily work alone, Relationships with Managers was deemed the most important job performance criterion for this personality measure.

*Hypothesis 2: Attention to Detail will be positively correlated to Safety of delivery drivers.*

Attention to Detail was hypothesized to correlate with the job performance criterion of Safety, as drivers who pay close attention to specifics may be more likely to notice potential safety hazards before they become a problem and are hypothesized to be more likely to avoid acting in a rash manner that might lead to an accident.

*Hypothesis 3: Emotional Stability will be positively correlated with Dependability and Reliability of delivery drivers.*

Emotionally Stability consistently has been found to be a robust predictor of job performance behaviors (Barrick & Mount, 1991, and others). Drivers who are more emotionally stable, resilient, and able to take job strain and pressure in stride were

hypothesized to show more evidence of traits such as initiative, follow-through, and stable job performance over time.

*Hypothesis 4: Introversion will be positively correlated with Productivity of delivery drivers.*

As the job of delivery driving is a solitary one, it was hypothesized that those individuals with a lower need for social contact in their personal needs hierarchy would be able to function better on a job in which there is little social contact throughout the day. It was hypothesized that the social distractibility that marks extroversion would result in lower productivity.

*Hypothesis 5: Comfort with Procedures will be positively correlated to Attendance and Timeliness of delivery drivers.*

Individuals who score high in Comfort with Procedures tend to be more methodical and more prone to follow company rules and regulations. The related narrow bandwidth trait of Orderliness has been found to be an important predictor of occupational success (Stewart, 1999). It was hypothesized that persons scoring higher on Comfort with Procedures would have more stable attendance, arrive at work earlier so as to start work promptly, and be less likely to misuse company leave policies.

*Hypothesis 6: Teamwork Orientation will be positively correlated with Teamwork of delivery drivers.*

Employees who scored higher on the Teamwork personality dimension tend to cooperate more with other employees and contribute to a sense of cohesion in a workgroup. I anticipated that supervisor appraisal of related criterion measuring job

behaviors such as participation in team meetings, collaboration, and helping others on the job would be related.

*Hypothesis 7: Tough-Mindedness will be positively correlated with Functioning Under Stress of delivery drivers.*

It was hypothesized that individuals who score high in the personality dimension of Tough Mindedness would tend to excel at related job performance criterion such as maintaining composure under very demanding work conditions and keeping cool when jobs are time-pressured.

*Hypothesis 8: Work Drive will be positively correlated with Productivity of delivery drivers.*

Work Drive is a narrow trait that has been shown to predict incremental variance beyond what can be accounted for by the Big Five factor of Conscientiousness (Lounsbury, Gibson, & Hamrick, 2003). Persons scoring higher in Work Drive would be logically expected to have a higher achievement orientation and to have more personal investment in job performance, and thus have higher productivity.

*Hypothesis 9: Mechanical Reasoning will be positively correlated with Ability to Learn of delivery drivers.*

Mechanical Comprehension has been shown to correlate with training in a wide range of industrial jobs (Roth & Champion, 1992). In various validation studies, a longer version of the test used in this inventory has been found to correlate with many key variables related to job performance, including Job Knowledge ( $r = .32$ ) and Ability to Learn ( $r = .37$ ) (Lounsbury and Gibson, 2004).

*Research Question: How do the personality variables, measured by the PSI, jointly predict variance in the Overall Performance Rating of delivery drivers?* To answer this question, a stepwise regression analysis was used.

### *Data Analysis*

The first step in data analysis consisted of testing the above hypotheses regarding both broad and narrow personality traits by correlating individual's scores on the Personal Style Inventory with his or her ratings on the Supervisor Rating Form. Null hypothesis testing was used to examine the strength and direction of correlations, with one-tail testing of hypotheses at the significance level of  $p < .05$ . Though all hypotheses are stated in the affirmative form, the null form of each hypothesis was used in testing for significance. For the research question, variables entering the prediction equation at a significance level of  $p < .05$  were included. Traits were allowed to enter the regression analysis in stepwise fashion.



## CHAPTER III

## RESULTS

Relationships between the scaled personality dimension and job performance criterion were computed using a Pearson product moment correlation coefficient. The resulting intercorrelations are displayed in Table 1. Data from Table 1 are used to answer the nine hypotheses investigated in this study.

*Results of Hypothesis Testing*

*Hypothesis 1: Agreeableness will be positively correlated with Relationships with Managers of delivery drivers.*

Evidence exists for a relationship between the personality dimension of Agreeableness and the job performance criterion of Relationships with Managers ( $r = .49$ ,  $p < .001$ ). Therefore, the null hypothesis that there is no correlation between these variables is rejected and the above experimental hypothesis is accepted. Agreeableness correlated with eight of the sixteen criterion measures assessed in this study, including criterion in both social and task performance domains. Agreeableness was one of only four personality dimensions to provide evidence for a significant correlation with Overall Performance Rating of drivers ( $r = .34$ ,  $p < .05$ ).

*Hypothesis 2: Attention to Detail will be positively correlated to Safety of delivery drivers.*

Table 1

## Correlations between Personality Dimensions and Job Performance Criteria

		Ability to Learn	Reasoning Ability	Job Skills	Openness Learning	Productivity	Quality
AGREEABLE- NESS	Pearson Correlation	.242	.176	.241	.272(*)	.378(**)	.225
	Sig. (1-tailed)	.069	.143	.069	.047	.009	.084
ASSERTIVE- NESS	Pearson Correlation	-.371(**)	-.099	-.008	-.242	-.192	-.090
	Sig. (1-tailed)	.010	.274	.480	.069	.121	.293
COMPANY LOYALTY	Pearson Correlation	.080	.039	-.071	.210	.139	-.013
	Sig. (1-tailed)	.313	.408	.335	.100	.200	.469
CUSTOMER SERVICE	Pearson Correlation	.010	.053	.092	-.155	-.041	.198
	Sig. (1-tailed)	.477	.374	.289	.173	.401	.113
ATTENTION TO DETAIL	Pearson Correlation	.349(*)	.381(**)	.347(*)	.268(*)	.324(*)	.201
	Sig. (1-tailed)	.015	.008	.015	.050	.022	.110
EMOTIONAL STABILITY	Pearson Correlation	.136	.058	-.040	.175	.131	.067
	Sig. (1-tailed)	.205	.364	.405	.143	.212	.342
INTROVER- SION	Pearson Correlation	-.137	.026	.000	-.088	-.169	.003
	Sig. (1-tailed)	.203	.437	.499	.298	.152	.493
COMFORT W/ PROCEDURES	Pearson Correlation	.204	.258	.293(*)	.382(**)	.380(**)	.141
	Sig. (1-tailed)	.107	.056	.035	.008	.008	.196
PREFERENCE FOR TENURE	Pearson Correlation	.194	.148	.055	.311(*)	.191	.088
	Sig. (1-tailed)	.118	.185	.371	.027	.122	.298
TEAMWORK	Pearson Correlation	.093	.048	-.009	.182	.138	-.130
	Sig. (1-tailed)	.287	.385	.479	.133	.202	.215
TOUGH- MINDEDNESS	Pearson Correlation	-.022	.163	.072	-.122	-.147	.201
	Sig. (1-tailed)	.448	.161	.331	.230	.186	.110
WORK DRIVE	Pearson Correlation	.249	.096	.062	.330(*)	.127	.081
	Sig. (1-tailed)	.063	.281	.355	.020	.221	.311
MECHANICAL APTITUDE	Pearson Correlation	.270(*)	.212	.129	.264	.119	.008
	Sig. (1-tailed)	.048	.098	.216	.052	.236	.480

\* Correlation is significant at the 0.05 level (1-tailed).

\*\* Correlation is significant at the 0.01 level (1-tailed).

Table 1: Continued

		Safety	Teamwork	Relations Associates	Stops/day	Relations Managers
AGREEABLE- NESS	Pearson Correlation	.243	.332(*)	.126	.387(**)	.491(**)
	Sig. (1-tailed)	.068	.020	.223	.008	.001
ASSERTIVE- NESS	Pearson Correlation	-.030	.141	.021	-.073	-.081
	Sig. (1-tailed)	.429	.197	.449	.329	.311
COMPANY LOYALTY	Pearson Correlation	.069	.510(**)	.447(**)	.136	.540(**)
	Sig. (1-tailed)	.339	.000	.002	.204	.000
CUSTOMER SERVICE	Pearson Correlation	.184	.101	.127	-.041	.076
	Sig. (1-tailed)	.131	.270	.220	.402	.322
ATTENTION TO DETAIL	Pearson Correlation	.208	-.148	-.097	.337(*)	.053
	Sig. (1-tailed)	.102	.184	.278	.018	.373
EMOTIONAL STABILITY	Pearson Correlation	.093	.272(*)	.094	.112	.287(*)
	Sig. (1-tailed)	.287	.047	.284	.249	.038
INTROVER- SION	Pearson Correlation	-.133	-.100	-.120	-.179	-.120
	Sig. (1-tailed)	.209	.272	.234	.138	.233
COMFORT W/ PROCEDURES	Pearson Correlation	.190	.172	.061	.451(**)	.365(*)
	Sig. (1-tailed)	.124	.147	.356	.002	.011
PREFERENCE FOR TENURE	Pearson Correlation	.106	.219	.247	.261	.260
	Sig. (1-tailed)	.261	.090	.065	.054	.055
TEAMWORK	Pearson Correlation	-.103	.276(*)	.185	.184	.387(**)
	Sig. (1-tailed)	.266	.044	.130	.131	.008
TOUGH- MINDEDNESS	Pearson Correlation	.218	-.068	.038	-.167	-.101
	Sig. (1-tailed)	.092	.341	.410	.155	.270
WORK DRIVE	Pearson Correlation	.081	.168	.315(*)	.093	.305(*)
	Sig. (1-tailed)	.313	.153	.025	.287	.030
MECHANICAL APTITUDE	Pearson Correlation	.081	-.306(*)	-.053	.082	-.146
	Sig. (1-tailed)	.311	.029	.374	.310	.188

\* Correlation is significant at the 0.05 level (1-tailed).

\*\* Correlation is significant at the 0.01 level (1-tailed).

Table 1: Continued

		Dependability/ Reliability	Attendance & Timeliness	Functioning under Stress	Gallons/d ay	Overall Rating
AGREEABLE- NESS	Pearson Correlation	.055	-.002	.283(*)	.350(*)	.343(*)
	Sig. (1-tailed)	.370	.496	.040	.015	.016
ASSERTIVE- NESS	Pearson Correlation	-.113	-.083	-.088	-.137	-.094
	Sig. (1-tailed)	.246	.309	.297	.203	.284
COMPANY LOYALTY	Pearson Correlation	.008	.015	.145	.081	.049
	Sig. (1-tailed)	.481	.465	.190	.311	.384
CUSTOMER SERVICE	Pearson Correlation	.107	.086	.103	.020	-.030
	Sig. (1-tailed)	.258	.302	.266	.452	.427
ATTENTION TO DETAIL	Pearson Correlation	.394(**)	.328(*)	.220	.388(**)	.362(*)
	Sig. (1-tailed)	.007	.021	.089	.007	.012
EMOTIONAL STABILITY	Pearson Correlation	-.056	-.135	.253	.048	.157
	Sig. (1-tailed)	.366	.207	.060	.385	.170
INTROVER- SION	Pearson Correlation	-.086	-.001	-.194	-.143	-.118
	Sig. (1-tailed)	.302	.496	.119	.192	.238
COMFORT W/ PROCEDURES	Pearson Correlation	.267	.306(*)	.297(*)	.418(**)	.417(**)
	Sig. (1-tailed)	.050	.029	.033	.004	.004
PREFERENCE FOR TENURE	Pearson Correlation	.041	.015	.243	.214	.294(*)
	Sig. (1-tailed)	.402	.463	.068	.095	.035
TEAMWORK	Pearson Correlation	.113	.124	.009	.146	.220
	Sig. (1-tailed)	.246	.226	.478	.188	.090
TOUGH- MINDEDNESS	Pearson Correlation	.002	-.057	.032	-.150	-.108
	Sig. (1-tailed)	.496	.366	.422	.181	.256
WORK DRIVE	Pearson Correlation	.254	.247	.112	.118	.189
	Sig. (1-tailed)	.060	.064	.248	.237	.124
MECHANICAL APTITUDE	Pearson Correlation	.086	.088	-.146	.119	.055
	Sig. (1-tailed)	.302	.296	.188	.234	.370

\* Correlation is significant at the 0.05 level (1-tailed).

\*\* Correlation is significant at the 0.01 level (1-tailed).

Results of hypothesis testing provide no evidence for a significant relationship between the personality measure of Attention to Detail and the Job Performance criterion of Safety, ( $r = .21, p > .05$ ), and the null hypothesis that there is no relationship between these two variables is accepted. Despite lack of evidence for correlation with supervisor appraisal of Safety, Detail Mindedness was significantly correlated with ten out of sixteen of the job performance criterion variables, including strong correlations with Dependability and Reliability ( $r = .39, p < .01$ ) and Reasoning Ability ( $r = .38, p < .01$ ). Attention to Detail was one of the of four personality measurers to correlate with Overall Performance Rating of drivers, ( $r = .36, p < .05$ ).

*Hypothesis 3: Emotional Stability will be positively correlated with Dependability and Reliability of delivery drivers.*

No evidence exists for a relationship between Emotional Stability and the job performance criterion of Dependability and Reliability ( $r = -.06, p > .05$ ), and the null hypothesis that there is no difference between the two variables is accepted. Though the literature suggests that Emotional Stability is one of the more robust predictors of occupational behavior, Emotional Stability was significantly related with only two of 16 of the Criterion measures, both of which lie in the realm of interpersonal relations—Teamwork ( $r = .27, p < .05$ ) and Relations with Supervisors and Managers ( $r = .29, p < .05$ ). No evidence exists for a relationship between Emotional Stability and Overall Performance Rating ( $r = .16, p > .05$ ).

*Hypothesis 4: Introversion will be positively correlated with Productivity of delivery drivers.*

Results of hypothesis testing provide no evidence for a relationship between Introversion and Productivity ( $r = -.17, p > .05$ ), and the null hypothesis that these two variables are not related is accepted. No evidence exists for relationship between the personality factor of Introversion and any of the job performance criterion measures.

*Hypothesis 5: Comfort with Procedures will be positively correlated to Attendance and Timeliness of delivery drivers.*

Evidence exists for a relationship between Comfort with Procedures and the job performance criterion of Attendance and Timeliness ( $r = .31, p < .05$ ), therefore the null hypothesis is rejected and the above experimental hypothesis is accepted. Comfort with Procedures proved to be strongly correlated with a wide range of job performance criteria assessed, including nine of the sixteen job performance criterion. Along with Agreeableness, Detail Mindedness, and Preference for Long Tenure, Comfort with Procedures was only one of four personality measures associated with Overall Performance Rating ( $r = .42, p < .01$ ).

*Hypothesis 6: Teamwork Orientation will be positively correlated with Teamwork of delivery drivers.*

Evidence exists for a relationship between the personality scale of Teamwork Orientation and the job performance criterion of Teamwork ( $r = .28, p < .05$ ). The null hypothesis that there is no significant correlation between these two variables is rejected and the experimental hypothesis is accepted. The only other significant relationship found with Teamwork Orientation was with Relationships with Managers and Supervisors ( $r = .39, p < .01$ ), a logically related area of occupational performance.

*Hypothesis 7: Tough-Mindedness will be positively correlated with Functioning*

*Under Stress of delivery drivers.*

No evidence exists for a significant correlation between Tough-Mindedness and the criterion of Functioning under Stress ( $r = .03, p > .05$ ), therefore the null hypothesis that there is no significant difference between these two variables is accepted. There was no evidence for the personality dimension of Tough-Mindedness having a relationship with any of the job performance criterion assessed in this study. Thus, the personality trait of Tough-Mindedness appears to be unrelated to the occupational performance of delivery drivers assessed in this study.

*Hypothesis 8: Work Drive will be positively correlated with Productivity of delivery drivers.*

The null hypothesis that there is no significant correlation between Work Drive and Productivity of drivers is accepted, as no evidence exists for a relationship between Work Drive and Productivity ( $r = .13, p > .05$ ). Despite a lack of relatedness to any of the task performance criterion, Work Drive was significantly correlated with the interpersonal factors of Relations with Associates ( $r = .32, p < .05$ ) and Relations with Managers ( $r = .31, p < .05$ ). No evidence exists for a relationship between Work Drive and Overall Performance Rating ( $r = .20, p > .05$ ).

*Hypothesis 9: Mechanical Reasoning will be positively correlated Ability to Learn of delivery drivers.*

The current study provided evidence for a correlation between a test of Mechanical Reasoning and the job related criterion of Ability to Learn ( $r = .27, p < .05$ ). Therefore, the null hypothesis is rejected and the experimental hypothesis that there is a

significant difference between Ability to Learn and the aptitude of Mechanical Reasoning is accepted. This finding agrees with other literature studies that indicate a correlation of the aptitude for Mechanical Comprehension with variables associated with training (Roth & Champion, 1992).

### *Research Question*

*Research Question: How do the personality variables, measured by the PSI, jointly predict variance in the Overall Performance Rating of delivery drivers?*

Results were assessed using a stepwise regression procedure. The personality trait of Comfort with Procedures entered as the personality variable most highly correlated with Overall Performance Rating of Drivers, at a Multiple  $R$  of .417 ( $p < .01$ ), which represents an  $R^2$  value of 17.4%. Once Comfort with Procedures entered into the regression equation, no other personality dimensions accounted for significant additional variance in the model. Complete results of the stepwise regression analysis are displayed in Table 2.

The relationship between Comfort with Procedures and Overall Performance Rating can be depicted parsimoniously in tabular format. Expectancy tables have been used in criterion-based concurrent validation studies to depict relationships between personality variable selected as predictive of variance and correlated measures of job performance (see Loveland, et. al., 2005). This table uses the personality dimension which accounts for variance in performance criterion to organize the data into meaningful display. For the current study, an expectancy table was generated from examining



Table 2: Results of Overall Stepwise Regression for each of the Personality variables added individually. Dependent Variable: Overall Performance Rating.

Step	Variable	Multiple $R$	$R^2$	$R^2$ Change
1	Comfort with Procedures	.417	.174	.174*
2	Agreeableness	.438	.192	.018
3	Customer Service	.454	.206	.014
4	Attention to Detail	.477	.227	.021
5	Preference for Long Tenure	.499	.249	.022
6	Emotional Stability	.548	.300	.051
7	Tough-Mindedness	.556	.310	.010
8	Introversion	.558	.311	.001
9	Company Loyalty	.558	.312	.001
10	Teamwork	.559	.313	.001
11	Work Drive	.560	.314	.001
12	Assertiveness	.561	.315	.001

\* Significant at the .01 level, all other values not significant  
n = 39

Table 3: Percentage of “Above Average” Delivery Drivers  
as a Function of Comfort with Procedures

Comfort with Procedures Score on Drivers Personality Inventory	Percent of Drivers with Overall Performance Rating “Above Average”
Lower one-third	15%
Middle one-third	50%
Upper one-third	58%

frequencies of scores in the distribution of Overall Performance Rating as a function of Comfort with Procedures, illustrated in Table 3.

By inspection of Table 3, only 15% of those drivers scoring in the bottom third on Comfort with Procedures received a rating of “Above Average” on measure of overall job performance, while 58% of drivers who scored in the upper third on the Comfort with Procedures variable were rated as “Above Average” in overall job performance.

#### *Additional Analysis: Intercorrelation of Personality Traits*

Though intercorrelations between predictor variables were not part of the *a priori* generation of research questions, these relationships are important to understanding the results of the present study. A table of Intercorrelations between the twelve personality traits measured in this study is attached as Appendix A. The two personality dimensions most strongly correlated with Overall Performance Rating were Comfort with Procedures ( $r = .42, p < .05$ ) and Attention to Detail ( $r = .36, p < .05$ ). Comfort with Procedures and

Attention to Detail, both narrow traits from within the broad personality factor of Conscientiousness, were also the two personality variables most strongly related to each other ( $r = .65, p < .001$ ). Work Drive, a third construct related to Conscientiousness, also strongly correlated with both Comfort with Procedures ( $r = .55, p < .001$ ), and Attention to Detail ( $r = .49, p < .01$ ). If all items that comprise the personality scales of Attention to Detail, Comfort with Procedures, and Work Drive are combined together, the resulting correlation between these combined traits and Overall Performance Rating is ( $r = .38, p < .05$ ), a sizable correlation for personality based testing. Thus, it is demonstrated that the three traits associated with the Conscientiousness measured by the PSI used to gather data for this study are strongly related to occupational performance of delivery drivers. The importance of these relationships will be highlighted further in the Discussion section of this current study.

Another notable trend in the data was the high intercorrelation between the personality trait of Agreeableness with the personality trait of Comfort with Procedures ( $r = .55, p < .001$ ). The strength of this correlation may explain the fact that Agreeableness was significantly related to many of the job performance criteria—including Overall Performance Rating—yet was not a significant factor in the regression equation once the factor of Comfort with Procedures entered the equation.

## CHAPTER IV

## DISCUSSION

Results of this criterion-based concurrent validation study provide evidence for some of the Big Five Traits correlating with Job performance of delivery drivers, as do some of the narrow traits. It was found that four of the nine experimental hypotheses were supported and it was demonstrated that the personality variable of Comfort with Procedures accounted for seventeen percent of the variance in the Overall Performance Rating of delivery drivers. Relationships found between both broad and narrow personality traits and job performance criterion are discussed below.

No evidence was found for significant correlation between the Overall Performance Rating of delivery drivers and the Big Five personality trait of Emotional Stability ( $r = .16, p > .05$ ). However, evidence existed for a relationship between Emotional Stability and job performance criteria involving relationships with managers and coworkers. This finding would seem to be of only minor importance for future selection of delivery drivers, as interpersonal interaction with others in the workplace is a small component of the delivery driving occupation due to most of the time on-the-job being spent in the field.

It was found that the Big Five trait of Agreeableness correlated with many of the job performance criteria. Though it was hypothesized that Agreeableness would correlate with Relationships with Managers, an unexpected finding was the strength of correlation of Agreeableness with task-oriented measures of occupational behavior. Agreeableness correlated with seven of the criterion measures, including measures such as gallons of

fuel delivered on a daily basis ( $r = .35, p < .05$ ) and Overall Performance Rating ( $r = .34, p < .05$ ). Results of the present investigation are at odds with a body of research that generally has found Agreeableness to have a weak relationship with overall job performance (Barrick, Mount & Judge, 2001). These researchers have suggested Agreeableness will have an important relationship with performance only “in jobs that involve considerable interpersonal interaction, particularly when the interaction involves helping, cooperating, and nurturing others” (Barrick, Mount, & Judge, 2001, p. 12).

Though Agreeableness correlated with many of the job performance criteria, it fails to enter the regression model as a predictor of variance in job performance. This may be due to a strong intercorrelation between the personality dimensions of Agreeableness and Comfort with Procedures ( $r = .55, p < .001$ ). Despite the lack of Agreeableness to account for additional variance in Overall Performance Rating of delivery drivers, it has been found to correlate with many job performance criteria in the present study and holds promise for guiding selection of delivery drivers.

Another of the Big Five traits—that of Introversion—did not significantly correlate with Overall Performance Rating ( $r = -.12, p > .05$ ), nor did it correlate with any of the job performance criteria measured. In various validation studies using the PSI, instances of Introversion correlating with the Overall Performance Rating criterion have been noted as exceptions rather than the rule (Lounsbury & Gibson, 2001). A logical conclusion from the results of this study is that Introversion holds little value in predicting occupational performance of delivery drivers.

Two other personality dimensions, Customer Service Orientation and Tough-Mindedness, were found to have no significant relationship with any assessed measures

of job performance. This lack of relationship could be due to lack of supervisor familiarity with certain areas of job performance, or could be due to the absence of directly corresponding performance criteria. Such would be the case with Customer Service Orientation, where the criterion of customer service was not assessed in the present study. An alternative explanation would be that the traits which did not correlate with any of the job performance measures—Introversion, Customer Service Orientation, and Tough-Mindedness—may not be important predictors of job performance and hold little utility for future selection of delivery drivers.

### *Conscientiousness and Related Narrow Traits*

Narrow traits within the broad construct of Conscientiousness appear to be related to occupational performance of delivery drivers in the current study. Though Conscientiousness was not assessed as a unitary construct, when the related narrow bandwidth traits of Comfort with Procedures, Attention to Detail, and Work Drive are summed together, the resulting combination correlates at a moderately strong level with Overall Job Performance ( $r = .38, p < .05$ ). This result closely matches the correlation of Conscientiousness with job performance across a wide range of occupations, a figure suggested by one meta-analysis of personality-based testing literature as approximately  $r = .31$  (Schmidt & Hunter, 1998). The potential exists that other factors within the broad trait of Conscientiousness, factors not related to the job performance of delivery drivers, would dilute the relationship between the personality variables in this study and job performance criteria. Whether an assessment of Conscientiousness as a unitary factor would be a more parsimonious explanation of the results presented in this study, or

whether other narrow facets included within this construct would weaken and obfuscate the relationships evidenced in the present study is unknown and is a research question that merits further investigation.

The process of using narrow personality traits to more accurately explain variance in occupational behaviors is a current trend in personnel selection (Ashton, 1998; Paunonen et. al., 2003). The increase in prediction of job performance by narrow personality traits is a trend supported by the findings of the present study, as Comfort with Procedures, predicts many of job performance criteria in the present study better than do any broad factors. This agrees with research by Jenkins and Griffith (2004), which suggests that an instrument developed through a personality-based job analysis will have a higher face validity and specific criterion relatedness than one measuring only broad personality traits.

The trait of Comfort with Procedures was chosen due the requirements of the job of delivery driver. To be successful in the occupation under investigation, the oil truck driver must proceed through a multi-step process that must be followed methodically and routinely at each delivery stop—a process analogous to a pre-flight checklist for pilots. It is logical that accidents, spills, and lost productivity would tend to occur when these sequential steps are done haphazardly or out of order, and that a preference for following routine would be a valuable personality trait in this occupation. Results of this study bear witness to the importance of basing narrow band personality traits on comprehensive job analysis.

An unexpected result of the present study is the lack of Work Drive to correlate with job performance criteria related to productivity. Work Drive is a narrow band trait

referring to one's disposition to work hard and for long hours, invest time and energy into job performance and extend oneself to achieve job success that has been demonstrated to predict a wide range of occupational behaviors more robustly than the broad trait of Conscientiousness (Lounsbury, Gibson, & Hamrick, 2003). Work Drive has also been shown to predict course GPA for junior high and high school students above and beyond what can be accounted for by the cognitive ability and the big five factors (Lounsbury et. al., 2003). It was an unexpected finding that Work Drive was not more strongly related to job performance criteria measured in this study.

Relationships between the broad trait of Conscientiousness and the constituent narrow traits of Comfort with Procedures and Work Drive can be informed by the work of Greg Stewart (1999). Stewart has provided evidence for the ability of the two narrow traits of Order and Achievement to better predict variance in job performance behavior above and beyond what is accounted for by the broad measure of Conscientiousness. Stewart demonstrated that the narrow trait of Order predicted performance for a sample of workers in the early phases of tenure on a job, while the narrow bandwidth trait of Achievement predicted job performance for those workers who had over one year tenure on the same job. Stewart explained these findings by hypothesizing that the narrow personality trait of Order serves as a central schema for organizing tasks which leads to early career success and then fades in importance as length of tenure increases, while Achievement is a narrow trait most associated with later career stage job performance once necessary skills and knowledge have been assimilated.

Results of the Stewart's research can inform the current study, as the Narrow traits of Order and Achievement are similar constructs to Comfort with Procedures and



Work Drive, respectively. As the field of truck driving is an occupational field with high turnover (de Croon et. al., 2004; Rhine, 1994), it logically follows that relatively large numbers of shorter tenure drivers may comprise the workforce. The personality trait of Comfort with Procedures may direct drivers to work in a methodical way. This trait may serve as a central organizing factor for occupational behaviors, and in line with Stewart's hypothesis may be more important to early career success. Following the same logic, after necessary job skills and knowledge are learned over a year, Work Drive may become more important to later career success. This hypothesis is unable to be tested in the current study, as data on length of tenure of drivers was not collected. A future direction for research would be to group drivers according to tenure, and to investigate the extent to which the variables of Comfort with Procedures and Work Drive predict job performance for the two groups.

### *Implications for Vocational Counseling*

Results from this study can inform the psychologist interested in career development, as a focus on the person-environment interaction and a focus on vocation are two of the five unifying themes that run throughout the history of counseling psychology (Gelso and Fretz, 2000). Seminal researchers in the field of Counseling Psychology have long advanced concerns that practitioners are moving away from career assessment in their practice and are not as interested in vocational concerns as they once were (Fitzgerald & Osipow, 1986). It is ironic that these movements away from focusing on vocational concerns occurred in the same decade when the Five Factor model became

established as a major theory of normal personality that provided a powerful new tool for assisting in matching person with occupation.

Results of the study I have presented here highlight relationships between personality variables and important job performance criteria for delivery drivers. These results indicate that the broad personality traits of Extroversion and Emotional Stability do not appear to be correlated with overall job performance, while narrow traits related to the broad trait of Conscientiousness and the broad trait of Agreeableness are significantly related to job performance. This represents a large change from Charles Goodwin's review of selection instruments for fleet delivery drivers in 1968 that found no correlation between tests used and driver performance. Using these updated results to inform the driver selection process may result in lower turnover and greater utility for both job seeker and employer.

### *Limitations*

One limitation on the findings of this study is the relatively small sample size that may lead to magnification of statistical effects. Though there are benefits in having a small sample size—statistically significant relationships are more meaningful—further wide scale testing may reveal diminished correlations between personality variables and job performance criteria due to regression to the mean (Anderson & Finn, 1997). Related to the small sample size is a possible limitation in generalizability of this study, which investigated the occupation of delivery driver at one specific company in a specific region of the country. Job duties and seasonal characteristics may vary enough for delivery drivers in different settings that relationships between personality trait and

performance criterion would differ significantly from the results found in the present study.

### *Suggestions for Future Research*

Suggestions for future research include augmentation with results of concurrent validation studies on delivery drivers in different industries and geographical areas to minimize stated threats to external validity. Longitudinal studies including data such as number of accidents, length of tenure, delivery time, days absent, and other objective variables would provide important objective criteria to supplement subjective supervisor ratings. Collecting data on length of tenure to assess incremental validity of narrow traits within the broad trait of Conscientiousness also is suggested.

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## APPENDICES

Appendix A - Intercorrelations of Personality Traits

		AGREE	ASSERT	CoLoy	CUSTSVC	DETAIL	EMOTSTAB	PROCED	TEAM	TENURE	TOUGH	WORKDRIV	INTROV
AGREE	Pearson Correlation	1	-.170	.287	.331*	.448**	.643**	.553**	.303	.259	-.216	.132	-.394*
	Sig. (2-tailed)		.299	.076	.040	.004	.000	.000	.061	.112	.186	.421	.013
	N	39	39	39	39	39	39	39	39	39	39	39	39
ASSERT	Pearson Correlation	-.170	1	-.088	-.199	-.251	-.067	-.062	-.040	-.149	.206	-.210	.084
	Sig. (2-tailed)	.299		.595	.225	.123	.687	.707	.808	.366	.209	.200	.612
	N	39	39	39	39	39	39	39	39	39	39	39	39
CoLoy	Pearson Correlation	.287	-.088	1	.146	-.144	.436**	.238	.318*	.356*	.017	.317*	-.514**
	Sig. (2-tailed)	.076	.595		.376	.381	.006	.145	.049	.026	.918	.049	.001
	N	39	39	39	39	39	39	39	39	39	39	39	39
CUSTSVC	Pearson Correlation	.331*	-.199	.146	1	.302	.238	.085	.024	.335*	-.132	.272	-.258
	Sig. (2-tailed)	.040	.225	.376		.062	.144	.607	.884	.037	.423	.094	.113
	N	39	39	39	39	39	39	39	39	39	39	39	39
DETAIL	Pearson Correlation	.448**	-.251	-.144	.302	1	.321*	.648**	.267	.401*	-.229	.491**	-.276
	Sig. (2-tailed)	.004	.123	.381	.062		.047	.000	.100	.011	.162	.001	.089
	N	39	39	39	39	39	39	39	39	39	39	39	39
EMOTSTAB	Pearson Correlation	.643**	-.067	.436**	.238	.321*	1	.431**	.242	.533**	-.045	.303	-.486**
	Sig. (2-tailed)	.000	.687	.006	.144	.047		.006	.137	.000	.788	.061	.002
	N	39	39	39	39	39	39	39	39	39	39	39	39
PROCED	Pearson Correlation	.553**	-.062	.238	.085	.648**	.431**	1	.459**	.600**	-.258	.546**	-.313
	Sig. (2-tailed)	.000	.707	.145	.607	.000	.006		.003	.000	.112	.000	.052
	N	39	39	39	39	39	39	39	39	39	39	39	39
TEAM	Pearson Correlation	.303	-.040	.318*	.024	.267	.242	.459**	1	.423**	-.491**	.327*	-.065
	Sig. (2-tailed)	.061	.808	.049	.884	.100	.137	.003		.007	.001	.042	.693
	N	39	39	39	39	39	39	39	39	39	39	39	39
TENURE	Pearson Correlation	.259	-.149	.356*	.335*	.401*	.533**	.600**	.423**	1	-.271	.634**	-.420**
	Sig. (2-tailed)	.112	.366	.026	.037	.011	.000	.000	.007		.095	.000	.008
	N	39	39	39	39	39	39	39	39	39	39	39	39
TOUGH	Pearson Correlation	-.216	.206	.017	-.132	-.229	-.045	-.258	-.491**	-.271	1	-.193	.210
	Sig. (2-tailed)	.186	.209	.918	.423	.162	.788	.112	.001	.095		.240	.200
	N	39	39	39	39	39	39	39	39	39	39	39	39
WORKDRIV	Pearson Correlation	.132	-.210	.317*	.272	.491**	.303	.546**	.327*	.634**	-.193	1	-.271
	Sig. (2-tailed)	.421	.200	.049	.094	.001	.061	.000	.042	.000	.240		.095
	N	39	39	39	39	39	39	39	39	39	39	39	39
INTROV	Pearson Correlation	-.394*	.084	-.514**	-.258	-.276	-.486**	-.313	-.065	-.420**	.210	-.271	1
	Sig. (2-tailed)	.013	.612	.001	.113	.089	.002	.052	.693	.008	.200	.095	
	N	39	39	39	39	39	39	39	39	39	39	39	39

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).



## **APPENDIX B - PERFORMANCE RATING FORM FOR DRIVERS VALIDATION STUDY**

You are being asked to participate in a research project that will assist your company to make better hiring decisions with regard to this position. Your cooperation is crucial for the success of this project. The information that you provide will be used only for research purposes and will never be revealed to the employee or to other supervisors, etc. All identifying information will be destroyed at the end of this project. These ratings will never appear in anyone's personnel file. At the completion of this project, we will destroy the names of raters and ratees in our files as soon as possible. If you have any questions about this process, please contact us at number shown at the bottom of the page.

In rating each employee, please read the description for each dimension carefully. Then rate the employee on each dimension.

Here are the rating categories you will use for each dimension:

- 1 = Performance does not meet, or rarely meets, minimum job standards.
- 2 = Performance is less than satisfactory in many respects.
- 3 = Performance is satisfactory in most respects but not all.
- 4 = Performance is satisfactory in all respects.
- 5 = Performance is above average performance but not superior.
- 6 = Performance is superior in almost all respects.
- 7 = Performance is definitely superior in all respects.
- 8 = Single best performance I have ever observed or even hope to observe.

Simply leave it blank if you cannot make a rating on that dimension.

### **Things To Remember When Providing Ratings**

- Each rating should be as honest and accurate as possible. Accurate rating of employees' actual job performance is essential for this project to provide useful results to your company.

- When rating an individual's job performance, think in terms of optimum performance as a benchmark -- not minimum standards. In many companies, jobs are evolving and requiring more thoughtfulness, awareness, wider range of job knowledge and greater participation in problem solving.
- Your rating should reflect a typical range of performance for the employee.
- Do not let your rating be influenced by factors not specifically related to performance on that particular dimension.
- When you are making ratings, try to think of specific examples of behavior that you have observed from actual job performance.
- Bear in mind that the lowest rating (1) on your form will be used for people who are performing so poorly that they are possibly going to lose their jobs or you wish they had never been hired.
- And, the highest rating (8) will be attained by only one person, if that many.
- Do not feel obligated to make all the ratings across every dimension the same for an individual employee. Even outstanding employees can have weaknesses in certain specific areas.
- If you do not have sufficient information to make a good rating, you should ask for input from people who have known the employee. Better to ask for input than to guess on the ratings you are giving.

## **ABILITY TO LEARN**

- Learns new job-related skills and practices quickly.
- Profits from on-the-job instruction.
- Able to learn from written documentation.
- Comprehends company memos, MSDS, equipment manuals, training materials, etc.
- Learns from instruction as well as from observation.
- Able to be cross-trained on several sets of job skills.

## **REASONING ABILITY**

- Reasons through problems using job knowledge.
- Demonstrates insight into complex problems.
- Makes few errors in judgment.
- Demonstrates good reasoning whenever making an exception to a standard procedure.

## **JOB SKILLS COMPETENCIES**

- Remembers how to perform tasks correctly.
- Understands the reasons for specific work procedures.
- Follows procedures appropriately.
- Makes very few mistakes.
- Does not make the same mistake twice.

## **OPENNESS TO NEW LEARNING**

- Willingly tries out new procedures, practices, or equipment (does not show resistance, negativity, or opposition.)
- Tries to learn more than just the basic information about the equipment he/she is using.
- Tries to understand larger plant-wide issues.
- Asks questions when he/she can't figure out things.
- Views change positively -- recognizes that change leads to a better future in the long run.
- Analyzes past mistakes when faced with similar problems.
- Seeks input from others on ways he/she could improve.
- Interested in personal development and career growth.

## **PRODUCTIVITY**

- Achieves a high level of productivity on the job.
- Puts forth a lot of effort; accomplishes as much or more than what you expect.
- Makes effective use of his/her time even during "downtime."
- Willing to work overtime when asked to do so.
- Works hard to meet deadlines.
- Does not have lapses in performance (is not sometimes hardworking, sometimes slow or lazy).
- Maintains a positive attitude about work, job obligations, and company mission.

## **QUALITY**

- Is neat and orderly in his approach to tasks.
- Takes the time to understand what you mean by a high quality product.
- Looks after the little details of a task to make sure everything is done right.
- Is rarely sloppy or haphazard in approaching tasks.
- Participates actively in workplace organization.
- Looks for underlying reasons for long standing problems.
- Tries to do the best possible work he/she is capable of -- doesn't settle for good enough.
- Thinks in terms of how can we do better and improve.

- Initiates ideas about alternative solutions -- not passive or lazy about thinking up new ideas.
- Participates in error proofing.
- Concerned about customer satisfaction of both internal and external customers.

## **SAFETY**

- Complies with safety rules (e.g., wears safety equipment where required on a regular basis).
- Does not act in an impulsive / rash manner which might lead to an accident.
- Shows recognition of conditions or behaviors which could cause an accident and takes appropriate action.
- Openly supports safety rules by referring to them in a positive manner.
- Points out potential safety problems to the supervisor or in team meetings.
- Encourages other employees to work in accordance with safety rules.
- Does not participate in horseplay.

## **TEAMWORK**

- Helps other people who may not know as much as he/she does.
- Is cooperative in a group meeting.
- Is considerate of other people's feelings in a team meeting.
- Participates actively in team meetings.
- Does not demand too much personal attention in team meetings.
- Collaborates with other people to come up with new ideas / solutions.
- Negotiates with other people on the team to come up with ideas which are acceptable to everyone.
- Voluntarily assists others with their work when his/her work load permits.
- Shows understanding of how his/her team fits within the larger organization.
- Shows understanding of how all teams / departments have to work cooperatively to make the plant successful.
- Does not try to sabotage other people / teams to achieve more for self or for own team.
- Willing to confront problems / interpersonal differences rather than stew about them.
- Helps everyone in the team participate in team activities.

## **RELATIONSHIPS WITH CO-WORKERS**

- Relates to people at work in a friendly, cordial manner.
- Acts in a tactful, courteous manner toward coworkers.
- Develops friendships with workers in his team.
- Engages in appropriate amount of casual conversation to foster good relationships.
- Shows respect for individual differences/diversity.
- Keeps co-workers informed about important information.
- Helps create an environment where people feel accepted and valued.
- Does not talk about people in a negative manner behind their backs.

## **RELATIONSHIPS WITH TEAM LEADERS, SUPERVISORS, AND MANAGERS**

- Shows respect and consideration for supervisors.
- Shows support for supervisors when talking with other associates.
- Does not undercut the supervisor behind his/her back.
- Can question policies / rules that he does not understand or accept without coming across as argumentative or quarrelsome.
- Does not challenge the supervisor in a destructive manner.
- Willing to interact with supervisory personnel (as opposed to being too bashful or too spiteful to speak up).
- Keeps supervisory personnel informed about important information.
- Helps the supervisor gain an understanding of “how things really work” on the shop floor.
- When workers are unhappy with the supervisor, he/she can present complaints in a constructive manner.
- Shows recognition of the larger role that upper level executives have in making the company successful.

## **DEPENDABILITY AND RELIABILITY**

- Keeps his/her word even when it is inconvenient / unpleasant to do so.
- Follows instructions fully even when he/she does not want to.
- Does not violate company rules or policies.
- Follows through on what he/she commits to do.
- Is honest -- does not lie or tell “half truths” to create the wrong impression.
- Has the initiative to do things that need to be taken care of without waiting to be told.
- Willing to do unpleasant tasks without grumbling or dragging his/her feet.
- Inspects his/her work to make sure that there are no errors.
- Is alert and attentive -- does not let his/her mind wander.
- Uses company resources with care (e.g., careful with equipment, not wasteful).

## **ABILITY TO FUNCTION UNDER STRESS**

- Keeps cool when jobs are time-pressured.
- Stays reasonably calm when during crises.
- Maintains composure even under very demanding work conditions.
- Continues to work effectively even when he/she is stressed by personal problems.
- When a conflict arises, does not lose control of his/her feelings.
- Accepts changes without complaining.
- Remains reasonably composed when being criticized or confronted.
- Allows other people to disagree with his/her ideas without getting annoyed.
- Seeks constructive (win-win) solutions to personal conflicts.

## **ATTENDANCE AND TIMELINESS**

- Has a good attendance record.
- Has a valid excuse whenever he/she is absent; does not misuse leave/attendance policies; does not take “sick” days unless absolutely necessary.
- Gets to work a little early so that he/she can start work promptly.
- Does not “goof off” when it gets close to quitting time.
- Does not take too long on breaks / lunch periods.
- Does not come in late except for rare, unavoidable circumstances.
- Does not leave in the middle of the day unless there is an emergency.

## EMPLOYEE SELECTION TEST VALIDATION PROJECT

### PERSON BEING RATED:

Name: \_\_\_\_\_ Job Title: \_\_\_\_\_

### RATER:

Name: \_\_\_\_\_ Job Title: \_\_\_\_\_

Here are the rating categories you will use for each dimension:

- 1 = Performance does not meet, or rarely meets, minimum job standards.
- 2 = Performance is less than satisfactory in many respects.
- 3 = Performance is satisfactory in most respects but not all.
- 4 = Performance is satisfactory in all respects.
- 5 = Performance is above average performance but not superior.
- 6 = Performance is superior in almost all respects.
- 7 = Performance is definitely superior in all respects.
- 8 = Single best performance I have ever observed or even hope to observe.

NA = I cannot make a rating on this dimension because I have not had sufficient opportunity to observe the employee's performance in this area.

After reading the descriptions of each dimension, please provide ratings for this individual:

_____ 1. Ability to Learn	_____ 6. Quality	_____ 11. Relationships with Supv/Mgrs
_____ 2. Reasoning Ability	_____ 7. Safety	_____ 12. Dependability & Reliability
_____ 3. Job Skills Competencies	_____ 8. Teamwork	_____ 13. Attendance & Timeliness
_____ 4. Openness to New Learning	_____ 9. Relationships with Associates	_____ 14. Functioning Under Stress
_____ 5. Productivity	_____ 10. Stops/day	_____ 15. Gallons/day
_____ 16. OVERALL RATING (Your general opinion of this person, <u>not an average</u> rating)		

## VITA

Mark Tichon was born in Midland, Michigan, and graduated from Midland High in 1989. He attended the University of Michigan where he earned a double major in History and Classical Archeology in 1994. He attained an M.S. degree in Clinical Psychology from Georgia Southern University in 1999. Mark enrolled in the doctoral program in Counseling Psychology at The University of Tennessee where he worked as a graduate assistant in technical team facilitation with the UT Engineering Fundamentals program. During his time at Tennessee, Mark specialized in working with groups, as well as counseling at-risk adolescents in an outdoor adventure therapy setting. In the summer of 2005, Mark completed an APA accredited pre-doctoral internship at Cherokee Health Systems, and hopes to continue to provide clinical services to historically underserved populations.